

Service Manual

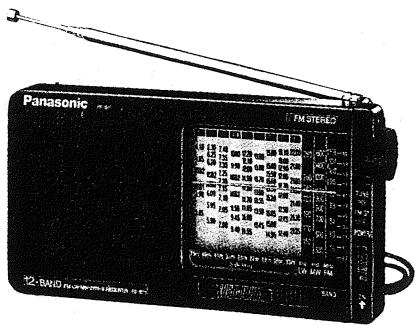
FM-LW-MW-SW 1~9 12-Band Receiver

Radio

RF-B11

Colour

(K) : Black



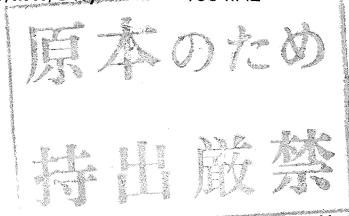
■ Specifications

Frequency Range:

FM	(PP)(GC)(GN)...88.0 – 108.0 MHz (E)...87.5 – 108.0 MHz
MW	(PP)(E)(GN)...520 – 1610 kHz (GC)...530 – 1605 kHz
LW	(PP)(E)(GN)...148.5 – 285 kHz (GC)...150 – 285 kHz
SW1 (60 m)	4.75 – 5.06 MHz
SW2 (49 m)	5.95 – 6.20 MHz
SW3 (41 m)	7.10 – 7.30 MHz
SW4 (31 m)	9.50 – 9.90 MHz
SW5 (25 m)	11.65 – 12.05 MHz
SW6 (22 m)	13.60 – 13.80 MHz
SW7 (19 m)	15.10 – 15.60 MHz
SW8 (16 m)	17.55 – 17.90 MHz
SW9 (13 m)	21.45 – 21.75 MHz

Intermediate Frequency:

FM	10.7 MHz
AM (LW/MW/SW)	460 kHz



Notes:

- Weight and dimensions shown are approximate.
- Design and specifications are subject to change without notice.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

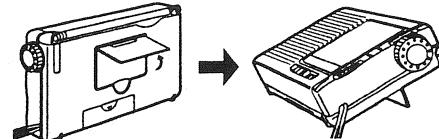
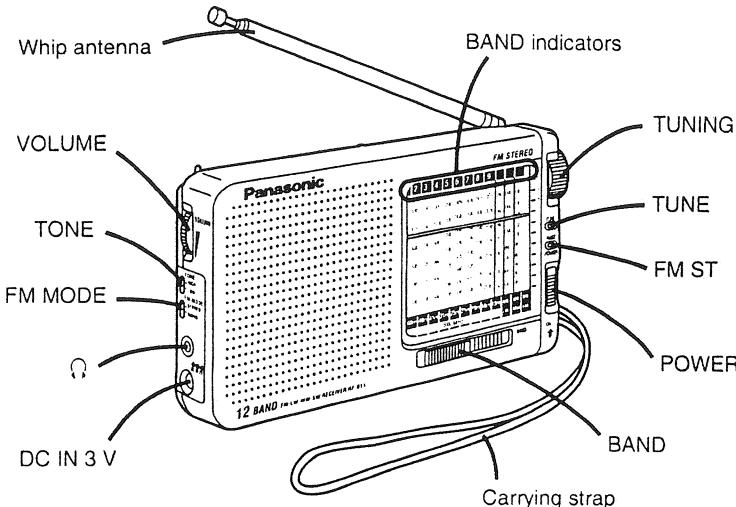
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■ Contents

	Page
Location of Controls	2
Operation Check and Main Component Replacement Procedures	2 ~ 5
Schematic Diagram	6
Printed Circuit Board and Wiring Connection Diagram	7
Measurements and Adjustments	8, 9
Replacement Parts List	10, 11, 13
Cabinet Parts Location	12
Packaging	13

■ Location of Controls



By using the stand, it is easy to operate.

BATTERY SERVICE LIFE

AA-size (UM-3) Batteries

Approx. 30 hours of FM mode (EIAJ)

Approx. 32 hours of AM mode (EIAJ)

The above battery service life is measured according to the conditions set forth by EIAJ (Electronic Industries Association of Japan). As the battery service life varies with the method of operation and environmental conditions, use these values as reference.

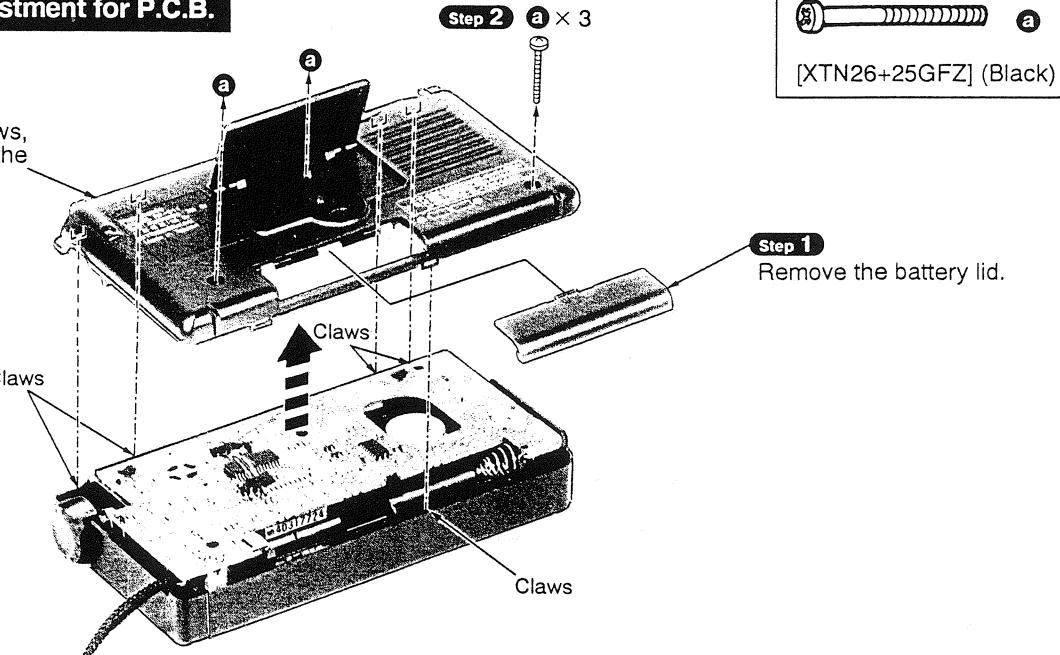
■ Operation Check and Main Component Replacement Procedures

NOTE

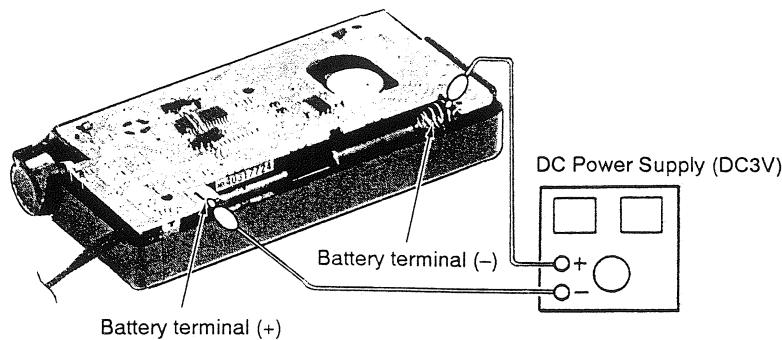
1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Illustrated screws are equivalent to actual size.
4. Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.

Checking and adjustment for P.C.B.

Step 3
Release the 5 claws,
and then remove the
rear cabinet ass'y.



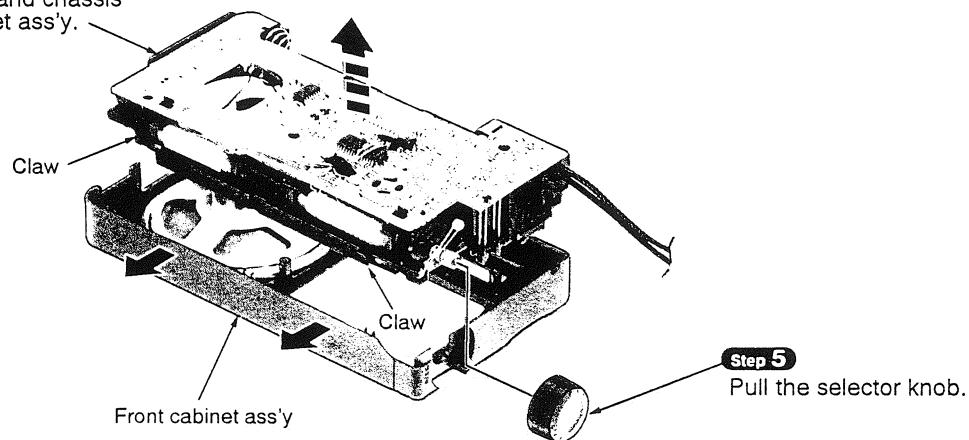
- Check the P.C.B. as shown below.

**Step 4**

Connect the DC power supply to battery terminals.

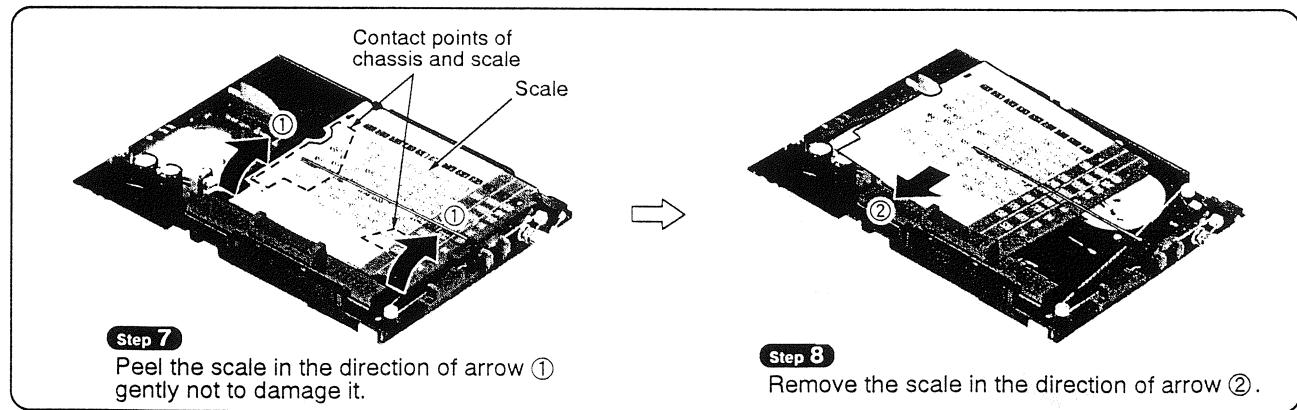
Step 6

Remove the P.C.B. and chassis from the front cabinet ass'y.

**Step 5**

Pull the selector knob.

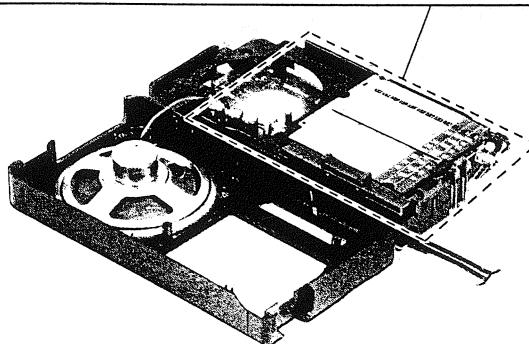
※ When removing the chassis, spread the front cabinet ass'y in the direction of arrow so that the front cabinet ass'y is not hooked by claws.

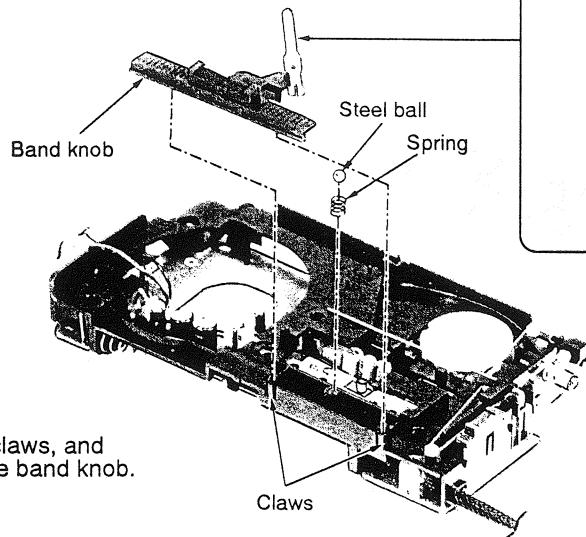
**Step 7**

Peel the scale in the direction of arrow ① gently not to damage it.

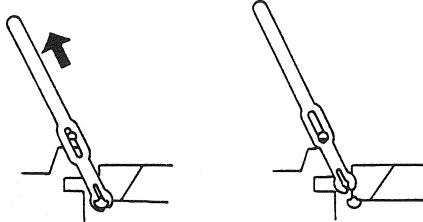
Step 8

Remove the scale in the direction of arrow ②.





Step 9 Pull the indicator in the direction of arrow.



Step 10

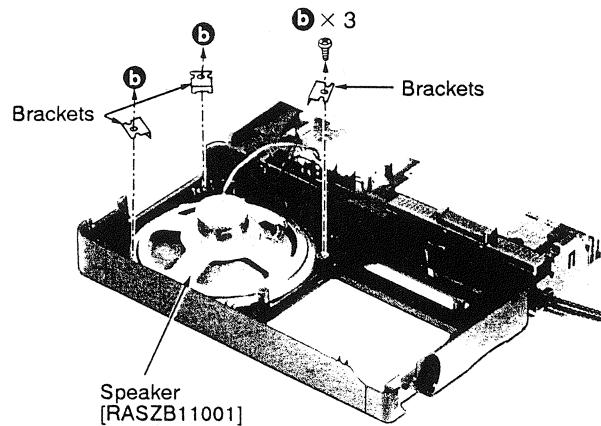
Release the 2 claws, and then remove the band knob.

NOTE

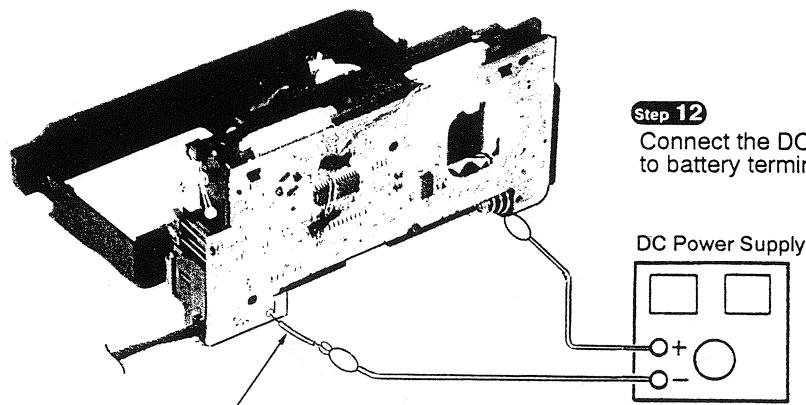
Take care not to lose the steel ball and spring when removing the band knob.

■ Removal for speaker

- Remove the 3 screws, and then remove the brackets.



- Check and adjust the P.C.B. as shown below.



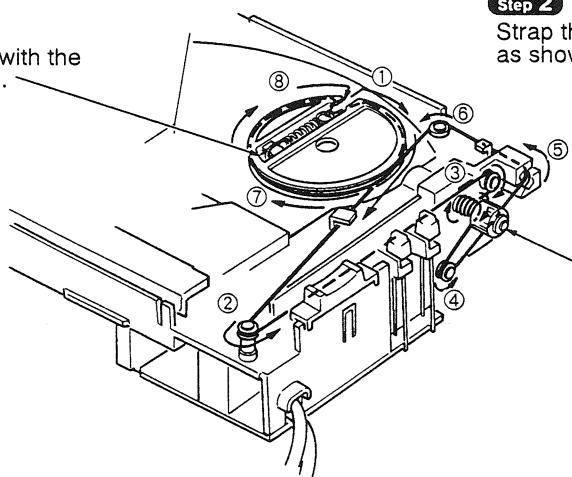
Step 11

Solder the lead wire with battery terminal.

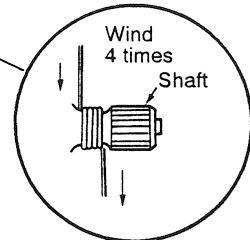
Step 12
Connect the DC power supply to battery terminals.

Replacement for dial rope**■ Strapping for dial rope**

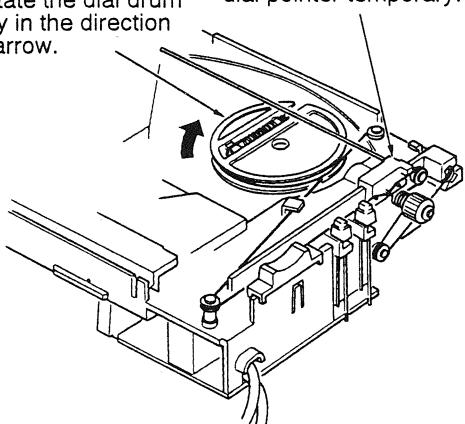
Step 1
Hook the spring with the hole of dial drum.



Step 2
Strap the dial rope in numerical order as shown bellow.

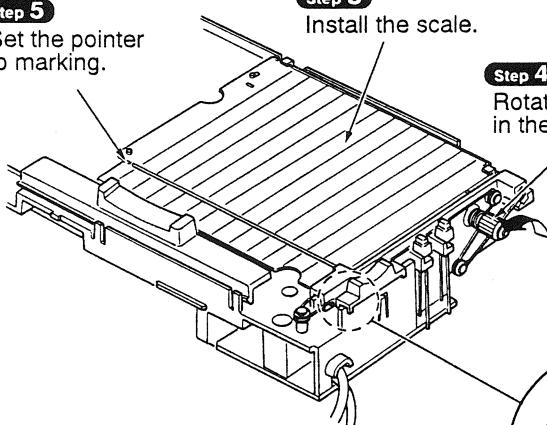
**■ Installing for the pointer ("0" point ajustment)**

Step 1
Rotate the dial drum fully in the direction of arrow.

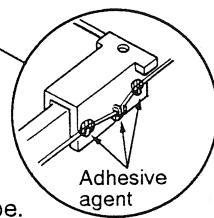


Step 2
Fix the pointer with dial pointer temporary.

Step 5
Set the pointer to marking.



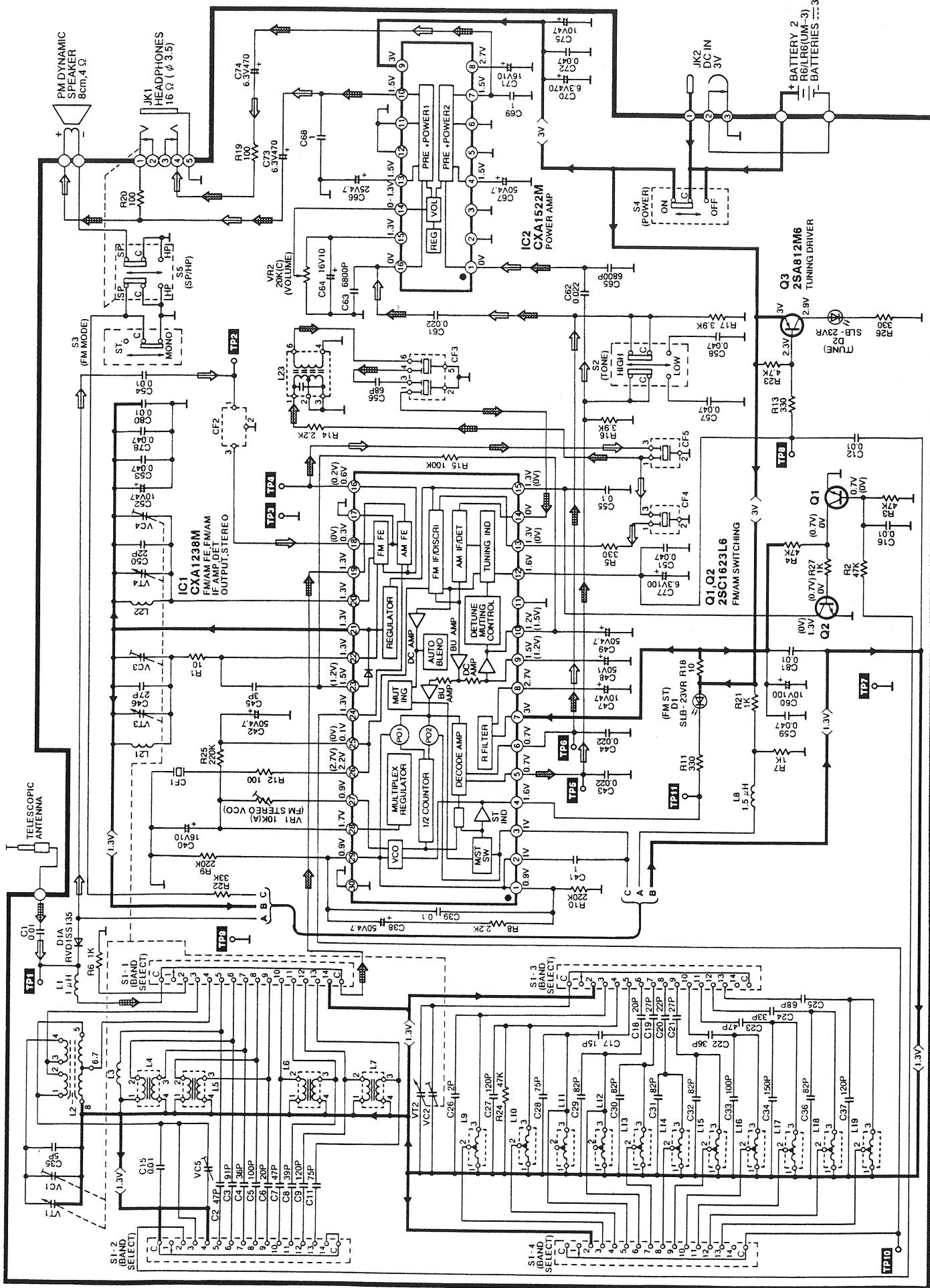
Step 4
Rotate the shaft fully in the direction of arrow.



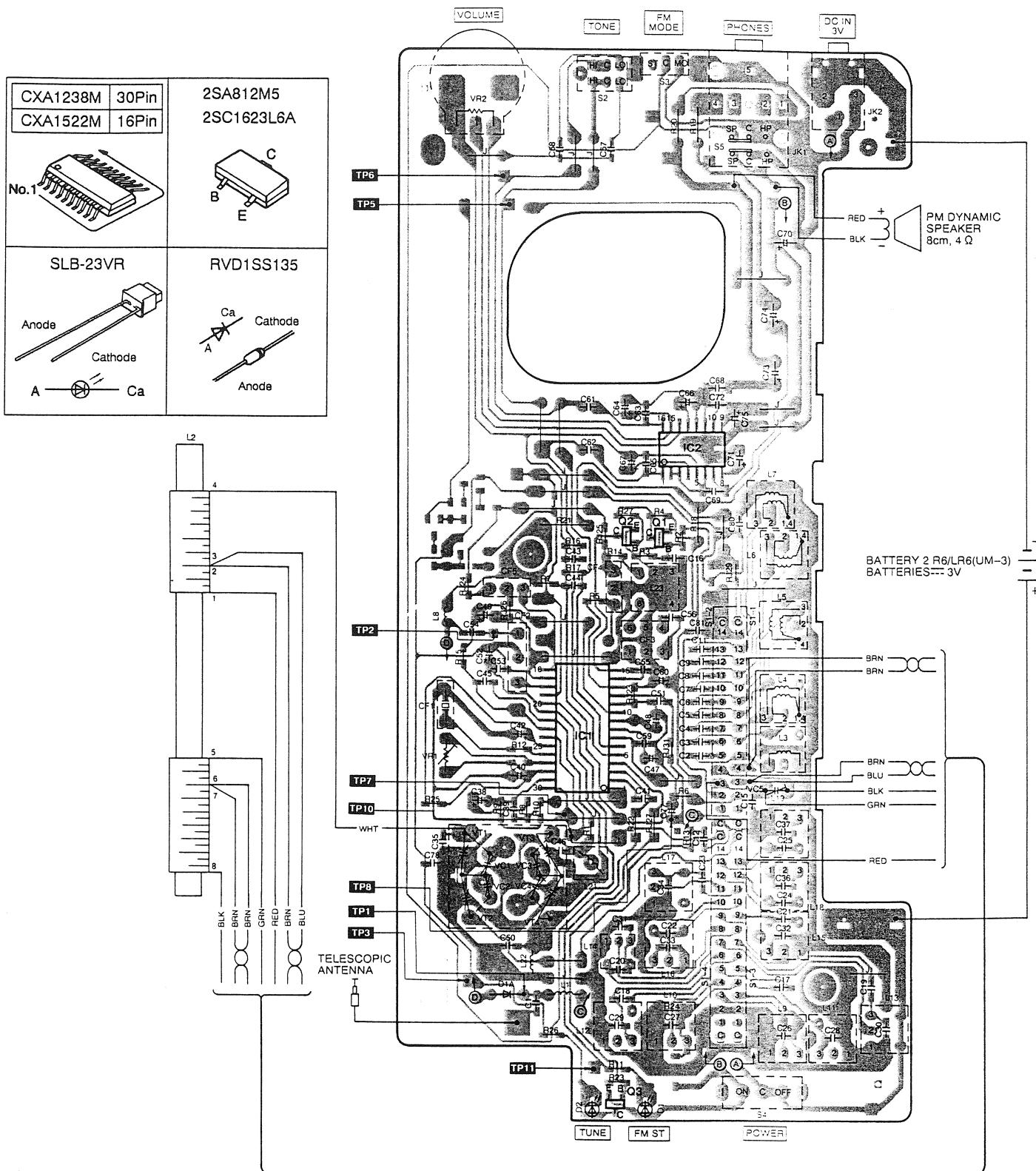
Step 6
Apply the adhesive agent to the pointer and dial rope.

■ Schematic Diagram

→ : FM Signal Line → : AM Signal Line → : + B Line



■ Printed Circuit Board and Wiring Connection Diagram


Notes:

- S1-1~S1-4 : Band select switch.
(1...No used, 2...FM, 3...MW, 4...LW, 5...SW9,
6...SW8, 7...SW7, 8...SW6, 9...SW5, 10...SW4,
11...SW3, 12...SW2, 13...SW1, 14...No used)
- S2 : Tone select switch.
- S3 : FM mode select switch.
- S4 : Power switch.
- S5 : Speaker/phones select switch.
- VR1 : FM stereo adjustment VR.
- VR2 : Volume control VR.

- Battery current:
Vol. min...14 mA (FM/AM) Vol. max...140 mA (FM/AM)
Measurement instruction
[AM (MW/LW/SW): 74 dB/m, 30% Mod.
FM: 60 dB, 30% Mod.]
- DC voltage measurements are taken with electronics voltmeter.
The negative terminal of the battery provides negative meter connection point.
() AM (MW/LW/SW) No mark FM
- This schematic diagram and printed circuit board diagram may be modified at any time with the development of new technology.

■ Measurements and Adjustments

● ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

- Set power source voltage to 3 V DC.
- Set operation switch to ON.
- Set band select switch to FM, LW, MW or SW1~9.
- Set volume control to maximum.
- Output of signal generator should be no higher than necessary to obtain an output reading.

● FM ALIGNMENT

The parts other than the ones listed below are aligned at the factory before they are supplied. Therefore, alignment of those parts is unnecessary when used for replacement.

SIGNAL GENERATOR or SWEEP GENERATOR	RADIO DIAL SETTING	INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Refer to Fig.1 and Fig.2)	REMARKS
CONNECTIONS	FREQUENCY	FM-RF ALIGNMENT		
FM-RF ALIGNMENT				
(1) Connect to test point TP2 through FM dummy antenna. Negative side to test point TP3 .	87.0MHz	Tuning capacitor fully closed.	Phones Jack (16 Ω) Fabricate the plug as shown in Fig.3 and then connect the lead wires of the plug to the measuring instrument.	L21 (FM OSC Coil)
(2) "	109.0MHz	Tuning capacitor fully open.	"	VC3 (FM OSC Trimmer)
(3) "	90.0 MHz	Tune to signal	"	L22 (FM ANT Coil)
(4) "	106.0 MHz	"	"	VC4 (FM ANT Trimmer)
FM STEREO ALIGNMENT				
(5) "	90.0 MHz (90 dB, 0 % Mod.)	"	Connect to test point TP10 . Negative side to test point TP7 .	VR1
				1. Set the volume control to minimum. 2. Adjust VR1 for 76.0 kHz ± 50 Hz reading on frequency counter.

● AM ALIGNMENT

SIGNAL GENERATOR or SWEEP GENERATOR	RADIO DIAL SETTING	INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Refer to Fig.1 and Fig.2)	REMARKS
CONNECTIONS	FREQUENCY	AM-IF ALIGNMENT		
AM-IF ALIGNMENT				
(6) Connect to test point TP10 . Negative side to test point TP7 .	460 kHz	Point of non-interference, (on/about 600kHz)	Phones Jack (16 Ω) Fabricate the plug as shown in Fig.3 and then connect the lead wires of the plug to the measuring instrument.	L23 (AM IFT)
MW-RF ALIGNMENT				
(7) Fashion a loop of several turns of wire and radiate a signal into the loop ant. of receiver.	515 kHz	Tuning capacitor fully closed.	"	L9 (MW OSC Coil)
(8) "	1650 kHz	Tuning capacitor fully open.	"	VC2 (MW OSC Trimmer)
(9) "	600 kHz	Tune to signal	"	(*1) L2 (MW ANT Coil)
(10) "	1400 kHz	"	"	VC1 (MW ANT Trimmer)
(*1) Fix antenna coil with wax after completing alignment.				
LW-RF ALIGNMENT				
(11) "	140 kHz	Tuning capacitor fully closed.	"	L10 (LW OSC Coil)
(12) "	170 kHz	Tune to signal	"	(*2) L2 (LW ANT Coil)
(13) "	270 kHz	"	"	VC5 (LW ANT Trimmer)
(*2) Fix antenna coil with wax after completing alignment.				

NOTE:

Before SW-RF alignment, be sure to prepare the following;

1. Set the output frequency of signal generator to 1000 kHz.
2. Turn the set to MW-band.
3. Adjust the tuning capacitor so that it receives 1000 kHz of output frequency and its output becomes maximum.
4. Fix tuning capacitor as this position, and make alignment of SW1 ~ SW9 on the following table.

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		INDICATOR (ELECTRONIC VOLTMETER or OSCILLOSCOPE)	ADJUSTMENT (Refer to Fig.1 and Fig.2)	REMARKS
	CONNECTIONS	FREQUENCY			
SW-RF ALIGNMENT					
(14) SW1	Connect to test point TPI through ceramic capacitor (0.001μF). Negative side to test point TP3	4.929 MHz	Phones Jack (16 Ω) Fabricate the plug as shown in Fig.3 and then connect the lead wires of the plug to the measuring instrument.	L7 (SW1 ANT Coil) L19 (SW1 OSC Coil)	Adjust for maximum output.
(15) SW2	"	6.062 MHz	"	L18 (SW2 OSC Coil)	"
(16) SW3	"	7.201 MHz	"	L6 (SW3 ANT Coil) L17 (SW3 OSC Coil)	"
(17) SW4	"	9.677 MHz	"	L16 (SW4 OSC Coil)	"
(18) SW5	"	11.827 MHz	"	L5 (SW5 ANT Coil) L15 (SW5 OSC Coil)	"
(19) SW6	"	13.654 MHz	"	L14 (SW6 OSC Coil)	"
(20) SW7	"	15.312 MHz	"	L4 (SW7 ANT Coil) L13 (SW7 OSC CIL)	"
(21) SW8	"	17.665 MHz	"	L12 (SW8 OSC Coil)	"
(22) SW9	"	21.561 MHz	"	L3 (SW9 ANT Coil) L11 (SW9 OSC Coil)	Adjust for maximum output. Repeat steps (14) ~ (22).

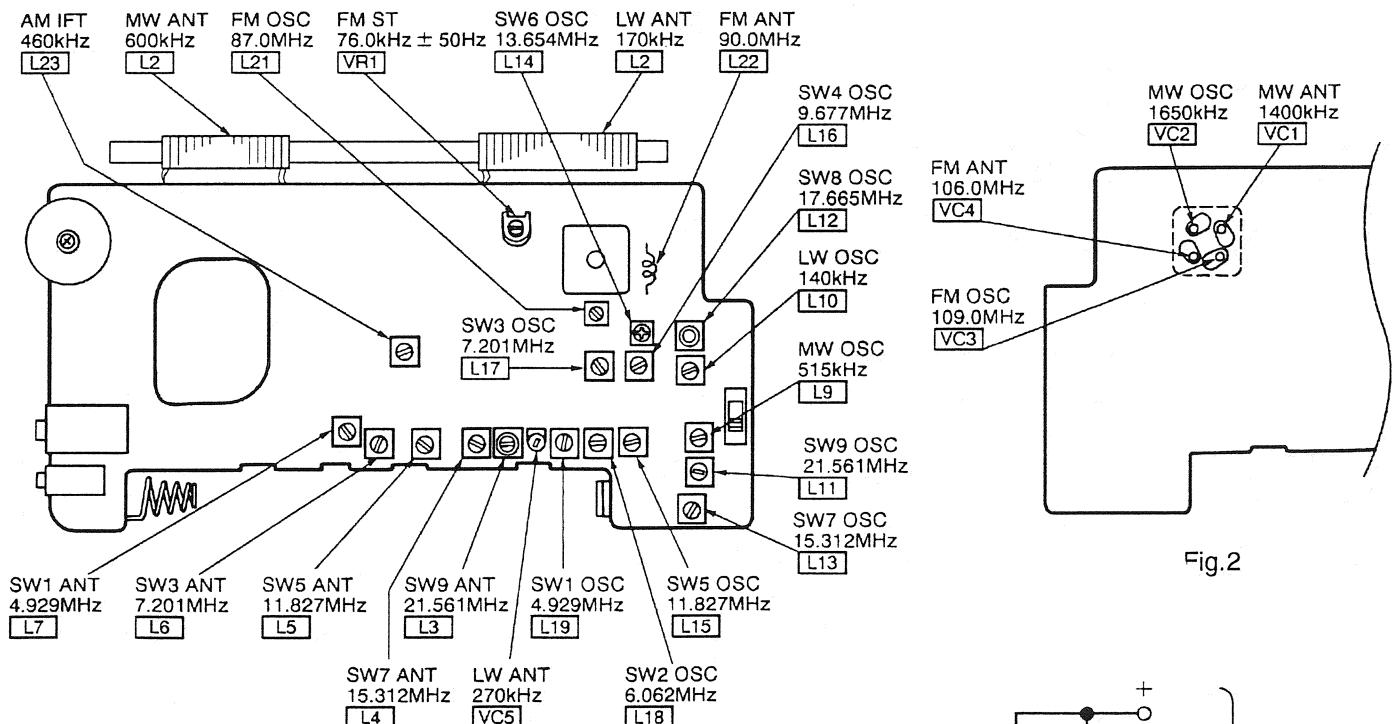
● ALIGNMENT POINTS (Please refer to Printed Circuit Board Diagram for test point locations.)


Fig.1

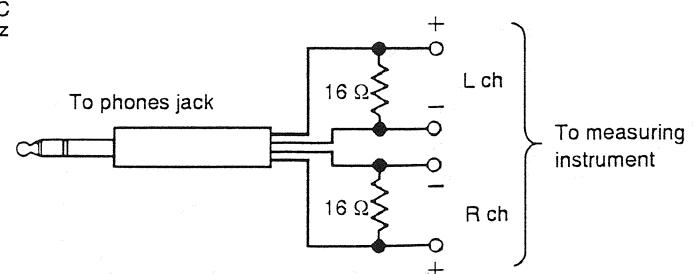


Fig.3

■ Replacement Parts List

Notes: *Important safety notice:

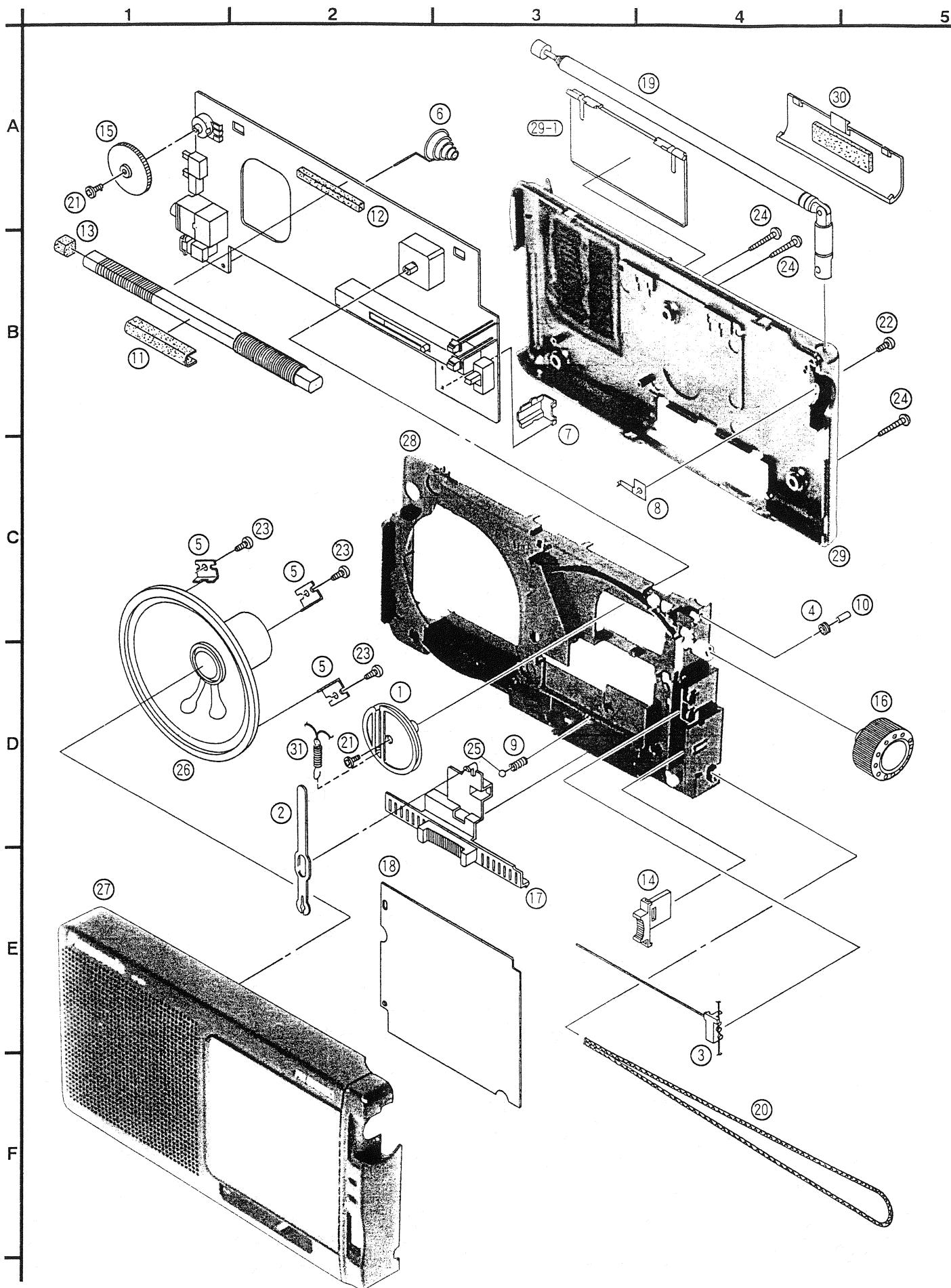
- Components identified by Δ mark have special characteristics important for safety.
- Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
- When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- *The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
- Parts without these indications can be used for all areas.
- * $[M]$ Indicates in Remarks columns parts that are supplied by MESA.
- * <VRD>: indicates parts that are supplied by Video Recorder Division.
- *The "(SF)" mark denotes the standard part.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		L17	RLOZB11004	COIL	
				L18	RLOZB11005	COIL	
IC1	CXA1238M	I.C, FM/AM FE, FM/AM IF AMP.		L19	RLOZB11011	COIL	
IC2	CXA1522M	I.C, POWER AMP		L21	RLOZB11007	COIL	
		TRANSISTOR(S)		L22	RLOZB11013	COIL	
Q1	2SC1623L6A	TRANSISTOR		L23	RLIZB11001	COIL	
Q2	2SC1623L6A	TRANSISTOR				FILTER(S)	
Q3	2SA812M5	TRANSISTOR		CF1	RLFZB11002	CERAMIC FILTER	
		DIODE(S)		CF2	RCRZB11001	CERAMIC FILTER	
D1	SLB-23VR	LED		CF3	RLFZB11001	CERAMIC FILTER	
D1A	RVD1SS135	DIODE		CF4	RLFZB11003	CERAMIC FILTER	
D2	SLB-23VR	LED		CF5	RLFZB11003	CERAMIC FILTER	
		VARIABLE RESISTOR(S)				SWITCH(ES)	
VR1	RRNZB11001	VR, VCO		S1	RSSZB11004	SW, BAND SELECT	
VR2	RRVZB11001	VR, VOLUME		S2	RSSZB11002	SW, TONE	
		VARIABLE CAPACITOR(S)		S3	RSSZB11003	SW, FM MODE	
VC1-4	RCVZB11001	VARIABLE CAPACITOR		S4	RSSZB11001	SW, POWER	
VC5	RCVCTZ3120	VARIABLE CAPACITOR				JACK(S)	
		COIL(S)		JK1	RJJZB11001	HEADPHONES (S5)	
L1	RLQZP1ROM-Y	COIL		JK2	RJJZB11002	DC IN	
L2	RLVZB11001	COIL					
L3	RLAZB11002	COIL					
L4	RLAZB11005	COIL					
L5	RLAZB11001	COIL					
L6	RLAZB11003	COIL					
L7	RLAZB11004	COIL					
L8	RLQZB11001	COIL					
L9	RLOZB11008	COIL					
L10	RLOZB11001	COIL					
L11	RLOZB11010	COIL					
L12	RLOZB11012	COIL					
L13	RLOZB11009	COIL					
L14	RLOZB11006	COIL					
L15	RLOZB11002	COIL					
L16	RLOZB11003	COIL					

Notes : * Capacity values are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
 * Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM) , 1M=1,000k (OHM)

Ref. No.	Part No.	Values & Remarks		Ref. No.	Part No.	Values & Remarks		Ref. No.	Part No.	Values & Remarks	
		RESISTOR(S)		C7	ECUV1H470JCN	50V	47P	C59	ECUV1E473ZFN	25V	0.047U
R1	ERJ6GEYJ100	1/10W	10	C8	ECUV1H390JCN	50V	39P	C60	ECEA1AU101	10V	100U
R2	ERJ6GEYJ473V	1/10W	47K	C9	ECUV1H121JCN	50V	120P	C61	ECUV1E223KBN	25V	0.022U
R3	ERJ6GEYJ473V	1/10W	47K	C11	RCUZB11002	50V	75P	C62	ECUV1E223KBN	25V	0.022U
R4	ERJ6GEYJ473V	1/10W	47K	C12	ECUV1E103MBN	25V	0.01U	C63	ECUV1H682KBN	50V	6800P
R5	ERJ6GEYJ331V	1/10W	330	C15	ECUV1E103MBN	25V	0.01U	C64	ECEA1CKA100B	16V	10U
R6	ERJ6GEYJ102V	1/10W	1K	C16	ECUV1E103MBN	25V	0.01U	C65	ECUV1H682KBN	50V	6800P
R7	ERJ6GEYJ102V	1/10W	1K	C17	ECUV1H150JCN	50V	15P	C66	ECEA1EKA4R7	25V	4.7U
R8	ERJ6GEYJ222V	1/10W	2.2K	C18	ECUV1H200JCV	50V	20P	C67	ECEA1HJ4R7	50V	4.7U
R9	ERJ6GEYJ224V	1/10W	220K	C19	ECUV1H270JCN	50V	27P	C68	ECUV1C1052FN	16V	1U
R10	ERJ6GEYJ224V	1/10W	220K	C20	ECUV1H220JCN	50V	22P	C69	ECUV1C105ZFN	16V	1U
R11	ERJ6GEYJ331V	1/10W	330	C21	ECUV1H270JCN	50V	27P	C70	ECEAOJU471	6.3V	470U
R12	ERJ6GEYJ101V	1/10W	100	C22	RCUZB11001	50V	36P	C71	ECEA1CU100	16V	10U
R13	ERJ6GEYJ331V	1/10W	330	C23	ECUV1H470JCN	50V	47P	C72	ECUV1E473ZFN	25V	0.047U
R14	ERJ6GEYJ222V	1/10W	2.2K	C24	ECUV1H330JCN	50V	33P	C73	ECEAOJU471	6.3V	470U
R15	ERJ6GEYJ104V	1/10W	100K	C25	ECUV1H680JCN	50V	68P	C74	ECEAOJU471	6.3V	470U
R16	ERJ6GEYJ392V	1/10W	3.9K	C26	ECUV1H020CCN	50V	2P	C75	ECEA1AU470	10V	47U
R17	ERJ6GEYJ392V	1/10W	3.9K	C27	ECUV1H121JCN	50V	120P	C77	ECEAOJKA101	6.3V	100U
R18	ERDS2TJ100	1/4W	10	C28	RCUZB11002	50V	75P	C78	ECUV1E473ZFN	25V	0.047U
R19	ERDS2TJ101	1/4W	100	C29	ECUV1H820JCN	50V	82P	C80	ECUV1E103MBN	25V	0.01U
R20	ERDS2TJ101	1/4W	100	C30	ECUV1H820JCN	50V	82P	C81	ECUV1E103MBN	25V	0.01U
R21	ERDS2TJ102	1/4W	1K	C31	ECUV1H820JCN	50V	82P				
R22	ERJ6GEYJ333V	1/10W	33K	C32	ECUV1H820JCN	50V	82P				
R23	ERJ6GEYJ472V	1/10W	4.7K	C33	ECUV1H101JCN	50V	100P				
R24	ERJ6GEYJ473V	1/10W	47K	C34	ECUV1H151JCN	50V	150P				
R25	ERJ6GEYJ224V	1/10W	222K	C35	ECUV1H050CCN	50V	5P				
R26	ERJ6GEYJ331V	1/10W	330	C36	ECUV1H820JCN	50V	82P				
R27	ERJ6GEYJ102V	1/10W	1K	C37	ECUV1H121JCN	50V	120P				
		CHIP JUMPER(S)		C38	ECEA1HJ4R7	50V	4.7U				
				C39	ECUV1E104ZFN	25V	0.1U				
				C40	ECEA1CU100	16V	10U				
				C41	ECUV1C105ZFN	16V	1U				
				C42	ECEA1HJ4R7	50V	4.7U				
RJ23	ERJ6GEYOR00V	1/10W	0	C43	ECUV1E223KBN	25V	0.022U				
RJ24	ERJ6GEYOR00V	1/10W	0	C44	ECUV1E223KBN	25V	0.022U				
RJ25	ERJ6GEYOR00V	1/10W	0	C45	ECUV1H030CCN	50V	3P				
RJ26	ERJ6GEYOR00V	1/10W	0	C46	ECUV1H270JCN	50V	27P				
RJ27	RRD18XK000-E	1/10W	0	C47	ECEA1AU470	10V	47U				
RJ29	ERJ6GEYOR00V	1/10W	0	C48	ECEA1HJ010	50V	1U				
RJ31	ERJ6GEYOR00V	1/10W	0	C49	ECEA1HJ4R7	50V	4.7U				
		CAPACITOR(S)		C50	ECUV1H220JCN	50V	22P				
				C51	ECUV1E473ZFN	25V	0.047U				
				C52	ECEA1AU470	10V	47U				
C1	ECUV1E103MBN	25V	0.01U	C53	ECUV1E473ZFN	25V	0.047U				
C2	ECUV1H470JCN	50V	47P	C54	ECUV1E103MBN	25V	0.01U				
C3	RCUZB11003	50V	91P	C55	ECUV1E104ZFN	25V	0.1U				
C4	RCUZB11001	50V	36P	C56	ECUV1H680JCN	50V	68P				
C5	ECUV1H101JCN	50V	100P	C57	ECUV1E473KBN	25V	0.047U				
C6	ECUV1H200JCV	50V	20P	C58	ECUV1E473KBN	25V	0.047U				

■ Cabinet Parts Location



Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS		25	RDBZB11-001	STEEL BALL	
1	RDDZB11-001	DIAL DRUM		26	RASZB11001	SPEAKER	
2	RGKZB11-001	DIAL INDICATOR		27	RFKGFB11E-K	FRONT CABINET ASS'Y	
3	RGJZB11-001	POINTER ASS' Y		28	RFKJFB11-K	DIAL	
4	RDPZB11-001	ROLLER		29	RFKHFB11E-K	REAR CABINET ASS' Y	(E)
5	RMAZB11-001	FIXER		29	RFKHFB11PP-K	REAR CABINET ASS' Y	(PP)
6	RJCZB11-001	BATT. TERMINAL (-)		29	RFKHFB11GC-K	REAR CABINET ASS' Y	(GC, GN)
7	RJCZB11-002	BATT. TERMINAL (+)		29-1	RFKNFB11-K	STAND	
8	RJHZB11-001	ANT. TERMINAL		30	RFKMFB11-K	BATTERY COVER	
9	RMBZB11-001	SPRING		31	RFKNFB11-KA	DIAL CORD ASS' Y	
10	RMSZB11-002	SHAFT				PACKING MATERIALS	
11	RMXZB11-001	SPACER(1)		P1	RPK0705	GIFT BOX	(PP)
12	RMXZB11-002	SPACER(2)		P1	RPK0706	GIFT BOX	(E, GC, GN)
13	RMXZB11-004	SPACER(3)		P2	RPN0962	PAD	
14	RGVZB11-001	KNOB, POWER		P3	RPH0170	SHEET	
15	RGXZB11-001	KNOB, VOLUME				ACCESSORIES	
16	RGWZB11-001	KNOB, TUNING		A1	RQT3130-E	INST. MANUAL	(E)
17	RGVZB11-002	KNOB, BAND		A1	RQT3131-G	INST. MANUAL	(GC, GN)
18	RKDZB11-002	DIAL SCALE	(PP, E)	A1	RQT3129-P	INST. MANUAL	(P)
18	RKDZB11-003	DIAL SCALE	(GC, GN)				
19	XEAZB11-001	TELESCOPIC ANTENNA					
20	RFCZB11-001	STRAP					
21	XQN17+C4	SCREW					
22	XSN26+5FZ	SCREW					
23	XTN26+6	SCREW					
24	RFKNFB11NA	SCREW					

■ Packaging

